Air Pollution Determination Using a Surveillance Internet Protocol Camera Images

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1 A new algorithm was developed for detecting and mapping air pollution from Landsat TM images. PM10 measumenets were collected simultaneously with the satellite image acquisition. The algorithm was derived based on the aerosol optical reflectance model and it was calibrated to measure the concentration of the pollutants. The measured satellite reflectance at the top of the atmosphere, ρ(TOA), was subtracted by the amount given by the surface reflectance to obtain the atmospheric reflectance. A total of 7 dates of Landsat TM satellite images were analysed in this study. The atmospheric reflectance values corresponding to the locations of the PM10 measurements of the each image ware combined and related to their PM10 values.The collected PM10 measurements were combined for algorithm calibration. The coefficients of the calibrated algorithm were determined and used to generate the air quality maps for all images.. This newly developed algorithm was used to estimate PM10 concentration over Penang and produced a high degree of accuracy.